FSHC LMI 2015-2025 Household Projections
Using Constant 2015 LMI Ratio

	2015	2025
Occupied Households	3,255,437	3,460,112
Percent LMI	41.41	41.41
LMI Households	1,348,144	1,432,832
Increase		
Occupied Households	-----	204,675
LMI Households	-----	84,688
Percent LMI/Total	-----	41.41

By increasing the proportion of all new households that would be LMI households, FSHC projects that more than two of every three new households in New Jersey over the next 10 years (2015-2025) will be LMI households.

FSHC Age Cohorts of LMI Households - The methodology used by FSHC in the estimation and projection of LMI households includes an additional step in order to disaggregate the projected regional growth of LMI households into households headed by persons under 65 years of age (working age component), and households headed by persons 65 years of age and older, presumed to be the non-working age component. This under 65/over 65 allocation, which is similar to the procedure used in the Round 2 methodology, pools LMI households on a statewide basis and then assigns the working age (under 65 years) portion of LMI households to regions where jobs previously increased. The projected increase of 65 and older LMI households (non-working) are retained in their original region. The results of FSHC's age distribution reveals a 2015-2025 projection with increased proportions of elderly (65+) households that are distinctly different than the current household composition and the increments observed since 2000.

Of particular note is the projected decrease in the number of working age LMI households between 2015 and 2025 while elderly LMI households represent more than the total increase in LMI households between 2015 and 2025:

FSHC - Age Distribution of Total and LMI Households

	2000	2015	2025
Occupied Households	3,065,952	3,255,437	3,460,112
Households 65 +	700,285	810,604	1,106,513
Percent 65 +	22.84	24.90	31.98
Households < 65	2,365,667	2,444,833	2,353,599
Percent < 65	77.16	75.10	68.02
LMI Households	1,263,885	1,348,144	1,486,615
LMI Households 65 +	439,056	451,770	613,480
Percent LMI 65 +	34.74	33.51	41.27
LMI Households < 65	824,829	896,373	873,135
Percent LMI < 65	65.26	66.40	58.73
Increase LMI Households	-----	84,259	138,471
LMI/Total Percent	-----	44.47	67.65
LMI Households 65 +	-----	**12,714**	**161,710**
LMI 65 + /LMI Increase	-----	15.09	116.78
LMI Households < 65	-----	**71,545**	**-23,238**
LMI < 65 / LMI Increase	-----	84.91	-16.78

As indicated in the preceding age distributions, the proportion of elderly LMI households declined slightly between 2000 (34.74 percent) and 2015 (33.51 percent) and accounted for 15.09 of the increase of LMI households between 2000 and 2015, which is below the share of elderly to all households (24.90 percent) in 2015. The working-age component (<65) accounted for 84.91 percent of the total increase in LMI households between 2000 and 2015 .

The projections of LMI households for the 2015-2025 period reflect completely changed demographic trends vis-a-vis the 2000-2015 period. FSHC's projection of future LMI households (2015-2025) anticipate a decrease in the total number of working-age LMI households from 896,373 LMI households in 2015 to 873,135 households in 2025, a decrease of 23,238 working-age LMI households. Elderly LMI households (65+), on the other hand are projected to increase from 451,770 to 613,480 households, a gain of 161,710 household which is more than the total increase (138,471) in LMI households. The FSHC projection of LMI households between 2015 and 2025 indicates a very significant aging of LMI households with actual declines in the number of working age LMI households.

Similar patterns are observed in the 2015-2025 projection of total households where elderly (65+) households account for an increase of 295,909 households out of the a total increase of 204,675 households while working-age households (<65) decrease by 91,254 households:

FSHC 2015 - 2025 Growth of Total and LMI Households

	All Households		LMI Households	
	2015-2025	Percent	2015-25	Change
Household Change	204,675	100.00	138,471	100.00
Working Age <65	-91,234	-44.58	-23,328	-16.78
Non-Working Age 65 +	295,909	144.46	161,710	116.78

The similarity of these age-based growth trends for all households as well as LMI households suggest that the forecasted aging of households and the loss of working-age households are a function of the NJDLWD population projections (Economic-Demographic Model) utilized by FSHC.

Econsult LMI Households - The projection of the number of LMI households for the 2015-2025 period undertaken by Econsult is based upon the "averaged" population projection and headship rate analysis previously discussed and which resulted in projections of total population, household population and headship rates that yielded estimates of the number of occupied households for 2015 and 2025. Econsult's methodology has projected an increase in the total number of occupied households from 3,252,210 households in 2015 to 3,398,450 households in 2015, indicating a 10-year increase of 146,240 occupied households. The estimation of the proportion of these households that would be LMI households is examined in detail on pages 40 through 52 of Econsult's May 16, 2016 "New Jersey Affordable Housing Need and Obligations" report. Definitions of median household income are provided along with comparisons of Census median incomes to the COAH qualifying incomes and observed differentials between median income reflected in the ACS (2014 One-Year) data vis-a-vis COAH's 2014 median incomes.

A detailed review of incomes is presented in support of Econsult's decision to calculate income directly from Census and ACS data for each household size and region rather than using HUD/COAH income thresholds. Differences are noted throughout the range of household sizes, but particularly for 1-persons households, where the HUD/COAH incomes were nearly 1.7 times the actual reported incomes. Using ACS income data projected to 2015 and 2025, Econsult estimates that 39.92 percent of all households in 2015 were LMI households and that this proportion would increase to 39.96 percent in 2025. During the 10 year interval, total households are projected to increase by 146,240 households, of which 40.71 percent, would be LMI households:

Econsult's 2015-2025 Household Projections
Total and LMI Households

	2015	2025
Household Population	8,781,280	9,075,767
Occupied Households	3,252,210	3,398,450
Headship Rate	0.3704	0.3745
Persons Per Household	2.7001	2.6706
LMI Households	1,298,400	1,357,940
LMI / Total Households -%	39.92	39.96
Increase 2015-2025		
Occupied Households	-----	146,240
LMI Households	-----	59,540
LMI / Total Households -%	-----	40.71

Econsult Age Cohorts of LMI Households - The methodology utilized by Econsult does not separately discuss the number of total households, or LMI households, that are "working-age" households (headed by a person under 65 years of age) and non working-age households (headed by a person 65 years of age or older) since their methodology follows the Round 1 methodology which does not reallocate working-age LMI households across regions. The reallocation of working-age households, which was implemented in Round 2, is the only cross-regional calculation in the entire methodology, and was intended to assign the increases in the working-age component to the regions where jobs previously grew. Although Econsult does not separate the under 65, and 65 and over, components for reallocation purposes, its population estimates are derived by county and age-groups using the only NJDLWD distribution available, which is contained in the Economic-Demographic

Model. With the only available age-cohort projection, it would be expected that Econsult would derive under 65, and 65 and over, distributions similar to those discerned in FSHC's projections.

A review of the spreadsheets provided with Econsult's May 16, 2016 "New Jersey Affordable Housing Need and Obligations" report discloses the following number and increases in under 65 and 65+ households:

Econsult's Age Distribution of Households and Household Growth

	2015	2025
Household Population	8,781,280	9,075,770
Occupied Households	3,252,210	3,398,450
Households 65 +	825,390	1,099,107
Households < 65	2,426,820	2,299,343
Percent 65 +	25.38	32.34
Percent <65	74.62	67.66
Household Increase	-----	146,240
Increase 65 +	-----	273,717
Increase < 65	-----	-127,477
Percent 65 +	-----	187.17
Percent <65	-----	-87.17

As would be expected, with Econsult's use of the same projection distribution (NJDLWD), the 2015-2015 household increases estimated by Econsult also reveal a decrease in the number of working-age households with all of the growth generated by non working-age households.

Prospective Need Comparisons

The May 17, 2016 report prepared by FSHC and the May 16, 2016 report by Econsult yield distinctly different measures of affordable housing needs for the 2015-2025 Prospective Need period. The estimates of the increases in total households are influenced by a variety of factors including the projection of total and household population, changes in headship rates and the resulting estimates of the accompanying increases in number of total households. Estimates of the proportion of LMI households is another factor that directly, and significantly, impacts the estimate of Prospective Need households, summarized as follows:

2015-2025 Prospective Need Comparisons

	FSHC	Econsult
Household Population Growth	404,072	294,540
Headship Rate Increment	0.5063	0.4965
Household Growth	204,675	146,240
LMI Proportion Increment	67.65	40.71
LMI Household Growth	138,471	59,540

Older Households

Despite their differences, both methodologies project decreases in the number of working age LMI households, with all LMI household growth attributed to older households headed by persons 65 years of age or older. The preponderance of the total and LMI household growth being attributed to increases in elderly (65 +) households has significant implications upon affordable housing needs. The reduced retirement income of older households is not necessarily indicative of a housing need, but is a function of lowered current income. Many older households also have reduced annual housing costs and supplement their expenditures with accumulated assets. An asset based, rather than income-derived, classification of older households could be expected to remove segments of this population from LMI projections. Econsult does address this issue in the context of households with "Significant Housing Assets" and reduces the statewide 2015-2025 Prospective Need by 5,400 households with an "Asset Test" adjustment. This asset test, however, is limited to housing assets and does not include accumulated savings and other non-housing assets of elderly households.

7.0 ALLOCATING MUNICIPAL NEEDS

After the affordable housing needs have been determined for the housing regions, these needs are then assigned to individual municipalities for the 2015-2015 Prospective Need period. These allocations utilize a process that distributes the identified regional need among the municipalities within that region using the following process:

- Identify and exclude "qualified urban aid" municipalities from the subsequent calculations as these municipalities have no prospective need obligations.

- Calculate "responsibility" factors for each municipality based upon their share of the region's non-residential/labor force development existing in, or attracted to, the municipality.

- Calculate "capacity" factors for each municipality's physical ability to absorb a share of the region's need using its proportionate share of vacant developable land and the fiscal ability of municipalities to absorb LMI housing based upon household incomes.

- The resulting regional shares of the responsibility and capacity factors are then averaged to produce an overall obligation expressed as a share of the calculated Gap Period and Prospective Need.

The foregoing procedures are utilized by both FSHC and Econsult, albeit with some variations in the data and structure of the calculations. The similarities and differences in the allocation process undertaken by FSHC and Econsult are summarized in the following steps.

Urban Aid Municipalities

The initial step in the allocation process requires the identification of the qualifying urban aid municipalities that are to be exempted from the assignment of Gap Period and Prospective Need obligations. The Prior Round methodology exempts certain Urban Aid Municipalities, designated each year by the New Jersey Department of Community Affairs (NJDCA), if these municipalities are determined to be "qualified" based upon their meeting any one of three defined criteria: 1) a level of existing LMI housing deficiency in excess of the average LMI deficiency in their region; 2) a population density in excess of 10,000 persons per square mile; 3) a population density between 6,000 and 10,000 persons per square mile and less than five percent vacant (non-farm) land as measured by the average of the percentage of parcels and valuation in the municipality. The current (FY 2016) DCA list identifies a total of 58 Urban Aid Municipalities that would be subject to these "qualifying" criteria.

FSHC Urban Aid Municipalities - In their May 17, 2016 report, FSHC enumerates the criteria for the designation of Urban Aid municipalities and indicates that of the total of 58 Urban Aid municipalities, 48 municipalities (FSHC, May 17, 2016, page 49) have been determined by FSHC to qualify for exemption from allocations of prospective need. Although FSHC's May 17, 2016 report does not provide a list of "qualifying" urban aid municipalities, their spreadsheets can be used to identify the exempted municipalities.

Econsult Urban Aid Municipalities - Econsult provides a discussion of the criteria for the identification of Urban Aid municipalities, notes that 45 municipalities were qualified in Round 2, and utilizes the current (FY 2016) urban aid list that includes a total of 58 urban aid municipalities. Using the qualifying standards, Econsult identifies a total of 42 municipalities that they have determined to be "qualified" for exemption in the prospective need allocations. The "qualifying" urban aid municipalities are listed by Econsult on page 60 of their May 16, 2016 report (New Jersey Affordable Housing Need and Obligations) and the basis for the "qualifying" status is detailed in Appendix B (Table B.1) of their report. The differences in the number of qualifying urban aid municipalities (FSHC = 48, Econsult = 42) and the specific municipalities exempted would affect the needs allocated to non urban aid municipalities.

Responsibility Factors

The municipal allocations in the Prior Rounds have included some measure of employment generating activities. In the Round 1 methodology, this responsibility was measured directly through the inclusion of municipal employment and employment growth as a share of the region's employment base and growth. The employment data utilized in Round 1, which relied upon municipal covered employment reported by the New Jersey Department of Labor was found to be problematic as a result of incorrect allocations of employment in ceratin municipalities due to differences in the address (zip code) of the employment and the minor civil division where the employment was actually located. This direct measure of employment was replaced in Round 2 through the use of "equalized nonresidential" (commercial and industrial) property valuations as a surrogate for employment and employment growth.

FSHC Employment Growth Surrogate - The May 17, 2016 report of FSHC utilizes equalized non-residential (commercial and industrial) valuation collected and reported by the Department of Community Affairs Division of Local Governmental Services (DLGS) in a manner similar to that which was utilized in Round 2. The data utilized by FSHC is 1990 and 2015 municipal data that is used to calculate changes in non-residential valuations, excluding Urban Aid municipalities. The 1990 starting point for calculating the changes in non-residential valuation is reportedly used "as that is the end point used by COAH in its Second Round methodology". While this assertion may be correct, the starting point for the current calculations of changes in non-residential valuation would more appropriately be 2005, rather than 1990, with the interval being compared being 10 years rather than 25 years, and the 2005-2015 (ten year) increment could serve as a basis for a ten-year projection from 2015 to 2025. The change in each municipality's non-residential valuation divided by the total change in the region's non-residential valuations are used by FSHC to compute each municipality's share of the regional change in non-residential valuation.

The Round 2 "equalized non-residential valuation" surrogate is accepted by FSHC with little discussion (May 17, 2016, page 48-49) despite the concerns that were raised in the October 30, 2015 Preliminary Review and Assessment. Whereas the intent in Round 2 to correct the address errors noted in Round 1was understandable, the use of the new (valuation) surrogate is not without deficiencies in attempting to measure actual employment and employment growth. An increase in non-residential valuation over a period of time indicates the increase in the value (equalized assessed valuation) of non-residential properties, not the number of commercial buildings, or their size. Specifically, the valuation surrogate does not indicate the number or jobs or increases thereof. Increases in valuation of commercial and industrial properties do not reflect the vacancies or occupancies in such properties and may reflect an increased valuation, even when employment is declining. The use of the non-residential valuation surrogate and the 1990 time frame selected for the measurement of valuation changes are factors that impact the reliability of this particular calculation.

Econsult Employment Growth - The May 16, 2016 report (New Jersey Affordable Housing Need and Obligations) presents a detailed review of this "responsibility" factor and proposes the use of a more up-to-date data source for employment than was available at the time of

the Round 1 and Round 2 calculations. According to Econsult, new data on municipal employment dating back to 2002 is now available through the Local Employment Dynamics (LED) Partnership Program of the U.S. Census Bureau. The new data is reported to be based upon a combination of state and federal administrative data from census and surveys and is provided for a variety of geographic areas, including municipalities. This data, which was not available for the Round 2 methodology, facilitates the use of direct employment data as originally contemplated in Round 1.

The direct utilization of "employment", as opposed to non-residential valuation as a surrogate for employment, is advocated by Econsult and would be consistent with objectives originally sought in Round 1. The new employment data used by Econsult departs from the "surrogate" utilized in Round 2 and adopted by FSHC, but would be consistent with the Round 1 methodology while using an updated data source not previously available. Econsult had further addressed this issue in their April 8, 2016 "Critique and Response" report (page 51), which compares increases in non-residential valuation to BLS employment growth on a regional and statewide basis for the 25 year (1990-2015) time period selected by FSHC. These comparisons, as summarized in the following tabulation, disclose varying relationships between non-residential valuation growth and actual employment growth in the State's housing regions:

Comparison of 1990-2015 Changes
in Non-Residential Valuation and Employment

	Percent of Statewide Growth	
Region	Non-Residential Ratable Growth	Employment Growth
1-Bergen, Passaic, Hudson, Sussex	28.3	1.5
2-Essex, Morris, Union, Warren	19.0	-6.8
3-Middlesex, Somerset, Hunterdon	17.6	36.2
4-Monmouth, Ocean, Mercer	19.6	43.6
5-Camden, Gloucester, Burlington	9.9	23.5
6-Atlantic, Cape May, Cumberland, Salem	5.6	2.0
State	100.0	100.0

With respect to the preceding information, Econsult notes that nearly one half (47.3 percent) of the total increase in non-residential valuation occurred in Regions 1 and 2 while these same Regions experienced an combined loss of 17,161 jobs between 1990 and 2015. These differentials are of significance to the extent that they influence municipal obligations within their respective

regions and may have a greater impact on the 1990-2015 correlations where statewide (private sector non-farm) employment is still below the levels reported in 2000 and has not yet fully recovered all of the non-farm jobs lost in the recession. The new employment information presented by Econsult appears to document a misalignment between valuation and employment growth on a regional basis, with an implication that such deviations may also be present at the municipal level.

Econsult's measurement of the employment responsibility factor encompasses both an employment base component and an employment growth component, both of which are expressed as a municipality's percentage of employment and employment growth in the region.

Non-Residential Responsibility Comparisons

Both the FSHC and Econsult procedures for the determination of the employment "responsibility" factor are founded upon Prior Round methodologies and both may have some shortcomings. There were, and may still be, some geocoding concerns with municipal employment data, but the indirect relationship between "valuation" and jobs is an equal concern. The relevant question is, which measure provides a more reliable indicia of this responsibility factor in the allocation of municipal local employment, assuming that there will be a increase in working age households?

Capacity Factors

In the Round 1 and Round 2 methodologies as well as the last (unadopted) iteration of COAH's Round 3 rules, municipal "capacity" allocations included both the "fiscal" and "physical" ability of municipalities to accommodate development. Fiscal capacity was determined by measures of income differences between a municipality and the region while physical capacity is derived using an analysis of the proportion of the region's undeveloped land located in each municipality that can accommodate development.

Household Income Differences

There were differences in the manner in which the "income" capacity factor was measured in Round 1 and Round 2. In Round 1, each municipality was assigned its share of the region's

aggregate household income. The direct proportion of regional aggregate income was replaced in Round 2 with a more complicated procedure that utilized two income measures: 1) the municipal share of the regional sum of the differences between median municipal household income and an income floor that was set at $100 below the lowest average household income in the region (excluding Qualify Urban Aid municipalities) , and: 2) the municipal share of the regional sum of differences between the municipal household income and the regional income floor ($100 below the lowest median, non-urban aid household income in the region) multiplied by the number of households in the municipality.

FSHC Household Income Factor - In their May 17, 2016 report, FSHC adopts the two step Round 2 methodology and utilizes ACS 2010-2014 (Five Year estimates) to establish municipal median and regional "floor" income levels (excluding qualifying urban aid municipalities). Median household incomes are obtained from the 2010-2014 ACS (Five Year Estimates) and the municipal differences in the share of the regional sum of the median household income vis-a-vis the regional floor less $100 and the cumulative (aggregate) difference of the first differential multiplied by the number of occupied households. These two income factors are then averaged to yield the municipal share of the regional income differences.

Econsult Household Income Factor - The income "capacity" factor is discussed on pages 64-66 of Econsult's May 16, 2016 report (New Jersey Affordable Housing Need and Obligations) where the differences between the Round 1 and Round 2 methodologies are acknowledged. The change in the income differences methodology between Round 1 and Round 2 are reported to have been undertaken to correct a large base bias in the Round 1 method in order to derive a Round 2 procedure that "...achieves both equity and more incisive income targeting". It is Econsult's position that this change may be reasonable but contains mathematical problems by comparing the "median" income of a municipality to the regional income floor based on "average" income. Econsult suggests that the assignment of income shares should be corrected in the first measure by using "medians" for both municipal and regional comparisons and the use of "average" incomes in the aggregate (second) measure where incomes are aggregated, since "medians" are not statistically

appropriate for aggregations. Other than the suggested technical corrections, Econsult follows the Round 2, two-step, income capacity calculations, averaged to yield the municipal share of regional income differences that were employed by FSHC.

Household Income Comparisons

The differences in the calculation of the income "capacity" factor are primarily a technical correction suggested for the use of similar income measures (median to median and mean to mean) in the two components of the income calculations. These differences have a minimal effect on the allocation of need, and do not change the regional and statewide need.

Undeveloped Land

The final factor to be considered in the allocation of municipal shares of regional affordable housing need is expressed as the ratio of undeveloped land in each municipality as a percentage of the undeveloped land in the region. In Round 2, COAH estimated the amount (area) of undeveloped land by municipality using satellite imagery and weighted these areas according to the "Planning Areas" in the 1992 State Development and Redevelopment Plan. The enactment of the Highlands Water Protection and Planning Act in 2004 required further adjustments to the undeveloped land allocations that were not included in Round 2. The Round 2 undeveloped land allocations utilized NJDEP land use/land cover data, adjusted for SDRP Planning Areas and Pinelands Planning Areas.

FSHC Undeveloped Land Estimate - The estimation of undeveloped land in FSHC's May 17, 2016 report follows the same methodology used by COAH in Round 2, with certain revisions to incorporate the updated 2001 State Development and Redevelopment Plan, the revised (2004) Meadowlands Master Plan and the land classifications in the 2008 Highlands Regional Master Plan. The undeveloped land in each municipality is based upon the 2007 land use/land cover released by NJDEP in 2010 and classified through a Rowan-Rutgers analysis of "available" and "restricted" land areas. These land classifications are not based upon municipal property records by the block and lot numbers assigned by municipal assessors. Digital maps of Planning Areas and other designations are overlaid on the GPS aerial surveys and weighting factors prepared by Rowan University were applied to yield undeveloped land by Planning Area, by municipality in 2010-2011. These weighted

undeveloped land areas were then utilized by FSHC for the determination of the municipal proportions of the regional area of undeveloped land.

Econsult Undeveloped Land Estimate - The proportion of regional undeveloped land located within each municipality that can accommodate development is determined by Econsult using several steps to account for the amount (acreage) of undeveloped land along with the environmental and planning constraints on this acreage. The approach used by Econsult deviates from that employed by FSHC through the use of tax assessment data by parcel in each municipality as provided by New Jersey's MOD IV property tax system. This data base is then overlaid with the State geographic information system (GIS) to account for environmental restrictions as well as state planning designations. A weighting system ranging from 0 (planning areas not conducive to development) to 1 (planning areas conducive to development) along with the addition of weighting for areas within the Highland's Preservation and Protection Areas. Development acreage in each planning designation is applied (multiplied) by the weight assigned and summed to yield the weighted developable land by municipality which is then summed to yield regional totals, from which municipal shares are derived. Econsult acknowledges that the resulting allocation, which follows the Round 2 methodology, does not encompass the potential for re-purposing of non-residential to residential buildings or for demolition and redevelopment.

Comparison of Undeveloped Land Estimates

The preparation of municipal developable land estimates is not a precise calculation, but relies upon interpretation of data from multiple sources. The primary distinction in the methodologies utilized by FSHC and Econsult is in Econsult's utilization of municipal Block and Lot classifications of use on a land parcel basis as opposed to area and use estimates from aerial (GIS) surveys. The per parcel basis used by Econsult offer a more precise and verifiable accounting, which was the intent of using tax roll data for estimating non-residential property valuation. The use of property tax records maintained by municipal assessors employed by Econsult was criticized by FSHC for its attempt at precision relative to less precise GIS interpretations, but would provide a "relative" level of accuracy from a single source. Deviations in the calculation of municipal shares of vacant developable land affect the allocations of regional need, but not the overall level of need.

Weighted Municipal Allocations

A municipality's share of regional affordable housing needs is derived by averaging the municipal proportions of each of the individual allocation factors and applying this averaged ratio to the calculated regional need.

FSHC Weighted Municipal Allocations - As noted by FSHC on page 57 of their May 17, 2016, report, after the three municipal allocation factors (non-residential valauation, household income, vacant land) have been estimated, these regional shares are averaged and then applied to the regional gross Prospective Need for the 2015-2025 Prospective Need period. This procedure results in a municipality's share (allocation) of the region's affordable housing needs for the 2015-2025 Prospective Need.

Econsult Weighted Municipal Factors - The municipal allocations undertaken by Econsult are presented within its May 16, 2016 report (New Jersey Affordable Housing Need and Obligations) utilizing an averaging of the responsibility and capacity factors. After deducting qualified urban aid municipalities, Econsult averages four measures, as opposed to the three measures used by FSHC. In this regard, the Econsult methodology includes employment level and employment change as separate measures along with the household income difference share and the developable land share for a total of four measures of municipal share. Econsult indicates that the inclusion of measures of both employment level and employment growth is undertaken in order to balance the allocation by providing two measures of responsibility (employment level and employment growth) and two measures of capacity (income differences and undeveloped land). Econsult had utilized four allocation factors in their December 30, 2015 report and justified the inclusion of two separate employment measures as were used in the Round 1 methodology (February 19, 2016, Response to Comments, page 49), which used both employment level and change in allocating prospective need, but includes them as separate (not averaged) measures of non-residential activity. The use of two factors of non-residential development was also indicated by Econsult to be consistent with the principles set forth in *AMG Realty* that were cited by Judge Serpentelli:

> With regard to internal checks and balances, two examples will suffice. The projection of population to determine prospective need averages two population models, one of which is considered conservative and one liberal. The allocation factors contain numerous checks and balances... The two employment factors in the prospective need formula tend to check each other because one reflects past trend and the other, future projections.
>
> [AMG Realty Co v Warren Tp, 207 N.J. Super. 388, p453-454]

In further support for their use of a method containing two employment measures, Econsult also notes that Mount Laurel IV explicitly references both the Round 1 and Round 2 methodologies as a basis for the Round 3 calculation:

> First, as we said in re Adoption of N.J.A.C. 5:96 & 5:97, supra, previous methodologies employed in the First and Second Round Rules should be used to establish present and prospective statewide and regional housing need. 215 N.J. at 620. The parties should demonstrate to the court computations of housing need and municipal obligations based on those methodologies. [Mount Laurel IV, p 41]

Variations in Weighted Allocation Factors

As is apparent in the foregoing review, there are differences in the data base and the specific calculations undertaken by FSHC and Econsult for the purpose of establishing municipal allocations of regional need during the Gap Period and Prospective Need period. These differences include:

1) variations in the number and identity of qualified urban aid municipalities;

2) the use of non-residential valuation as surrogate for employment growth as opposed to employment growth as reported in the data from Local Employment Dynamics (LED) Partnership Program of the U.S. Census Bureau;

3) the use of median and mean (average) household incomes in the measurement of municipal income differences and the use of median as opposed to mean income in municipal and regional income aggregations;

4) the use of GPS aerial surveys as opposed to Block and Lot information for the identification of undeveloped properties, and;

5) the use of three as opposed to four allocation factors in determining municipal shares of regional affordable housing needs.

Each methodology has a foundation in the prior round rules and each has included updated information in certain calculations.

8.0 SECONDARY SOURCES

After completing the determination of the increases in the number of LMI households during the 2015-2025 Prospective Need period, the municipal allocations are then adjusted to account for secondary sources of housing supply and demand. Secondary sources represent market forces that affect the supply of housing units and include demolitions, residential conversions and filtering. In the Round 2 methodology, there was a fourth source known as "spontaneous rehabilitation" that represented investments by private sector property owners to upgrade existing deficient units. This additional secondary source (spontaneous rehabilitation) was not included in the last (third) iteration of COAH's Third Round rules, and has not been included in the most recent methodologies advanced by FSHC or Econsult.

Residential Demolitions

Demolitions of residential housing units reflect the fact that the State's housing inventory is not static and, from time to time, housing structures are destroyed and/or demolished. Such demolitions may occur for a variety of reasons including damage from natural causes such as fire, floods and storm damage, from non-natural circumstances such as deterioration and dilapidation, response to code requirements, urban renewal, redevelopment activities, abandonment or simply a desire to replace an existing structure with a new structure. Demolitions are a measurement of structures, not households, and include vacant and seasonal housing units that are outside of the number of occupied "households" that is the foundation for formulating affordable housing needs. Additionally, since all demolished units are "vacant" at the time of their demolition, a determination of the prior occupancy status, their soundness and their suitability for LMI households are needed for accurate inventory adjustments.

FSHC Demolition Estimates - The estimation of the number of housing units demolished during the 2015-2025 Prospective Need period are prepared by FSHC using data maintained by the Department of Community Affairs (DCA) and published in the New Jersey Construction Reporter. The specific data utilized by FSHC is municipal demolition information for the years from 1999 through 2015 where the post 2012 demolition data for four Sandy impacted counties (Atlantic, Cape May, Monmouth and Ocean) were adjusted to account for storm-related demolitions. The proportion

of the 1999-2015 adjusted demolitions that impact LMI households were estimated by FSHC by using the Round 2 methodology where the proportion of LMI households in each county is increased to 120 percent of the county's LMI share and is then "capped" at 95 percent of conversions. These calculations were reported to result in an estimate of 30,819 demolitions affecting LMI households during the entire 1999-2015 (16 year) period, or approximately 1,926 demolitions annually affecting LMI households. This annual rate was then projected for the ten- year Prospective Need period and resulted in an estimate of 19,262 demolitions affecting LMI households between 2015 and 2025.

Econsult Demolition Estimates - The estimation and projection of the number of demolitions affecting LMI households during the 2015-2025 Prospective Need period undertaken by Econsult utilizes the base data from DCA as well as certain refinements to identify and account for deficient housing units occupied by a LMI household, unoccupied (vacant) housing units and non-deficient housing occupied by LMI households. The additional data used in the preparation of these estimates and projections includes Components of Inventory Change (CINCH) prepared by HUD and The American Housing Survey. In Econsult's estimates, for demolitions to be counted as a reduction of affordable housing units, the units must: 1) be occupied, and; 2) be occupied by a LMI household. Using these additional sources applied to the Sandy adjusted demolitions (2000-2014 excluding 2012 and 2013), the total demolitions were estimated to yield average annual demolitions of 4,923 units, of which 41.6 percent, or 2,049 units annually, were estimated to affect LMI households. Additionally, with the use of the CINCH data, it was further estimated that 8.9 percent of the LMI occupied units had moderate to severe problems consistent with "deficient" units. Applying the occupancy and deficiency adjustments, the application of the expanded analysis to the base DCA demolition data resulted in a projection of 18,653 LMI occupied, non-deficient demolitions during the 2015-2025 Prospective Need period.

Demolition Estimate Comparisons

The estimates of the residential demolitions reflect structure-based changes that are dependent upon accurate reporting of residential buildings for which a demolition permit is issued. Municipal variations in the reporting of permits issued for the total, or partial, demolition of a structure may or may not accurately reflect the number of residential "units" involved. Similarly,

the prior occupancy status of the demolished units is derived from national, rather than New Jersey or regional data.

A comparison of the 2015-2025 demolitions affecting LMI households estimated by FSHC and Econsult is summarized below:

Comparison of Estimated LMI Demolitions

	2015-2025	Annual
FSHC	19,470	1,947
Econsult	18,653	1,865

The proportion of demolished units affecting LMI households is derived either from national Components of Inventory Change (CINCH) data (Econsult) or from county-based estimates of the proportion of LMI households multiplied by "120 % of each county's LMI share, capped at 95 % of conversions" (FSHC). The proportion of the demolished housing units that were "non-deficient" prior to demolition is not calculated by FSHC and is estimated by Econsult using national CINCH data. The estimating processes undertaken by FSHC and Econsult are intended to provide a reasonable estimate of the number of demolished housing units that; 1) were not vacant housing units; 2) were not seasonal housing units; 3) had been occupied prior to their demolition; 4) were occupied by and affordable to a LMI household prior to demolition; and, 5) were not deficient housing units with severe or moderate problems. The degree to which the procedures utilized by FSHC and Econsult have achieved the objective of determining the number of demolitions of non-vacant, non-seasonal, recently occupied, occupied and affordable to LMI households, and which are not deficient, is not readily apparent, but do yield similar results with a deviation of less than five percent.

Residential Conversions

The creation of a new residential dwelling unit from an existing structure (residential or non-residential) represents another market driven source of housing supply. For example, in certain sub-markets there may be a demand for smaller units that is not addressed by normal market operations. This component of housing need can be satisfied by creating smaller units from larger units and typically occurs in areas where larger structures can be readily adapted to create smaller units while

increasing the number of units that previously existed. Older two- to four family homes have been considered by COAH to be ideal candidates for conversions and may yield more residential units than previously existed. Net residential conversions are a source of housing supply that were determined to reduce LMI housing need in the Prior Round methodology. In the Round 2 methodology, COAH calculated conversions on a regional basis and then distributed LMI conversions within the regions based upon the presence of structure types, i.e. two- four family units, that were deemed conducive to conversion. The impact of residential conversions was summarized by COAH its discussion of secondary sources in both Round 2 and Round 3:

> "Conversion is the creation of housing units from already existing structures. Almost all conversion consists of additional dwelling units being created from other residential units, and very rarely from nonresidential units. This type, termed residential conversion, is a significant and recognized source of housing supply to low- and moderate-income families."[26 N.J.R. 2349, 46 NJ.R 985)].

Residential conversions are not a housing activity that is directly reported, but were estimated in Round 1 and Round 2 as a net change in housing stock over the prior period, adjusted for new construction and demolition activity, with conversions assumed to represent the residual. The specific calculation of the number of residential conversions is influenced by the data used to measure the housing increment (total housing units or occupied households) and to measure construction activity (building permits or certificates of occupancy).

FSHC Residential Conversions - An estimate of the number of residential conversions is undertaken by FSHC through the use of a procedure similar to that employed in Round 2 where the observed increase in housing is compared to the construction authorized by building permits, less residential demolitions, with the difference attributed to conversions. In FSHC's July 2015 report, this calculation was reported (page 36) to be represented by following procedure: **"conversions = change in occupied housing units - building permits + demolitions"**. The results of this calculation was reported to amount to 11,058 converted housing units, which needs to be further adjusted to reflect just those conversions that affect LMI households.

FSHC notes that the Prior Round methodologies provide limited guidance for the calculation of the LMI share, except that "low- and moderate-income conversions in normal markets are on par with demolitions in this income sector". Following COAH's Round 2 procedures, the proportion of residential conversions affecting LMI households was calculated by FSHC using the Second methodology for determining the LMI proportion of demolitions. This procedure applies 120 percent of each county's LMI household share to estimate the proportion of total conversions affecting LMI households. This income calculation resulted in a statewide estimate that 54.3 percent of the total increase in residential conversions, or 6,006 residential units, would be allocated to LMI households between 1999 and 2025 and would represent a corresponding supply of affordable housing units, or an average annual supply (reduction of need) of 375 LMI housing units.

In their updated May 17, 2016 analysis, FSHC's follows a procedure similar to that discussed in their prior (July 2015) report, but uses updated housing unit data from the 2000 Census and the 2010-2014 ACS (Five-Year) survey yielding a mid-point (2012) estimate. Building permits are also adjusted for Sandy in the four hardest hit counties, as were the number of demolitions by municipality. The definition of the procedure utilized in the May 17, 2016 report deviates somewhat from the prior (July 2015) methodology through the replacement of "occupied households" with total "housing units" in the most recent report, where the new process is summarized as : **"conversions = housing units - demolitions + building permits".**

The regional conversion estimate for 1999-2012 is then pro rated for 2015 and the annualized 1999-2015 conversion rate is applied to the 2015-2015 projection period. The Round 2 methodology allocated each region's share of conversions to the region's municipalities in proportion to the share of 2-4 family structures in each municipality and this procedure is again followed in FSHC's most recent allocations. The revised (May 17, 2016) calculation is reported to result in an estimate of the conversions between 1999 and 2015. Using COAH's Round 2 procedures, the proportion of residential conversions affecting LMI households was calculated by FSHC by taking 120 percent of each county's LMI household share, capped at 95 percent of conversions. FSHC reports that the LMI share by county applied to each municipality yields a decrease of 3,310 LMI units due to conversions between 1999 and 2015. Applying this annualized conversion rate to the ten-year (2015 2025) prospective need period is reported to result in a 2,068 unit decrease in the supply of LMI housing units between 2015 and 2025.

The differences between FSHC's July 2015 and May 17, 2016 estimates of residential conversions for the 2015-2025 period has been reversed from a 375 unit annual supply of LMI units due to conversions to a 207 unit annual decrease in LMI need attributable to residential conversions, a net annual differential (increase) of 582 units in the LMI need attributable to residential conversions:

FSHC Statewide Annual Conversion Supply of LMI Housing

	1999-2025	2015-2025
July 2015	+375	------
May 17, 2016	-----	-207

Econsult Residential Conversions - Residential conversions are estimated by Econsult for the 2015-2015 period in their December 30, 2015 report and March 16, 2016 "Need and Obligations" reports. The methodology used by Econsult for the determination and projection of residential conversions follows the Round 2 methodology with an updating of data sources. Econsult acknowledges that residential conversions are not a housing activity that is directly reported, but were estimated in Round 2 as the net change in housing stock over the prior period, adjusted for new construction and demolition activity, with conversions assumed to represent the residual. To perform their calculations, the changes in housing stock between the 2000 and 2010 Census are measured at the county level and then aggregated to housing regions. Construction activity during this period is measured at the municipal level using certificates of occupancy reported by the New Jersey Department of Community Affairs (NJDCA) and summed to the regional level. Data regarding demolitions at the municipal level from 2000 to 2010 were obtained from NJDCA and summed to the regional level. Adjustments were made to the certificate of occupancy data for Region 1 due to observed reporting deviations relative to five other regions of the state.

Construction and demolition data are both summed to the regional level and then compared to their net difference to the change in housing supply reflected in the corresponding Census data with the net difference attributed to residential conversions. This procedure differs from that

employed by FSHC primarily through the use of certificates of occupancy as opposed to building permits. The allocation of the indicated regional conversions is then distributed to individual municipalities using the methodology described in Round 2, which determined that, "residential conversion is highly correlated with the presence of two- to four-family housing units". Accordingly, conversions are allocated to municipalities based upon their share of regional two-four-family units as reflected in 2009-2013 ACS data.

The proportion of the residential conversions affordable to LMI households is based upon the Round 2 methodology that found that a greater proportion of residential conversions would flow to the LMI population than the population as a whole. The specific procedure utilized in Round 2 applied 120 percent of the proportion of households qualifying as LMI in each county to the total residential conversions allocated to each municipality. The calculations for the 2015 to 2025 period differ from Econsult's December 22, 2015 and March 24, 2016 "Need and Obligations" reports due to the reduction of the total number of conversions estimated in Region 1. Econsult's estimates of the number of residential conversions available to LMI households during the 2015 to 2025 period are summarized below:

Econsult Statewide Conversion Supply of LMI Housing

	December 22, 2015	March 24, 2016	May 16, 2016
2015-2025 LMI Conversions	20,152	20,152	11,662

Econsult estimates that the net differential between the 2015-2025 increase in the total number of housing units and the sum of certificates of occupancies less demolitions would indicate 23,161 conversions of which 50.1 percent, or 11,662 would represent a supply of LMI housing units.

Residential Conversion Comparisons

Residential conversions are housing activity that is indirectly estimated as the differences in the sum of data compiled from different sources: housing increases as reported by the Census or Census-based (ACS) sources; residential demolitions reported by the New Jersey Department of Community Affairs and residential construction authorized by Building Permits, or Certificates of Occupancy, reported by NJDCA. The First and Second Round methodologies do not provide a

procedure for calculation of the proportion of conversions available to LMI households other than the reference that, "Residential conversions to low and moderate income housing in normal markets are often on par with demolitions for this income sector". This reference could suggest that the number of converted units is equivalent to the number of demolished units or that the LMI proportion of converted units is comparable to the LMI proportion of demolished units. FSHC interprets this as the proportion used for demolitions, which is 120 percent of each county's LMI household share, applied to the estimated number of converted units. Econsult adopts a similar procedure for estimating the proportion of converted units available to LMI households.

The concept that the difference between the actual increase in housing units (reported by the Census) less the sum of the number of demolitions and building permits (or certificates of occupancy) is attributable to "conversions" presumes a level of accuracy and assumptions that may or may not support this premise. Building permits are issued and reported by municipal construction officials with differing degrees of thoroughness and accuracy and building permits issued in one year (or housing cycle) may be constructed in another year or housing cycle, or not at all. Certificates of Occupancy are also subject to varying degrees of accuracy in reporting and may be issued for the occupancy of a structure containing multiple housing units. Annual comparisons of building permits to certificates of occupancy from 2000 to2014 (Econsult, September 24, 2015, page 18) discloses sizeable deviations in the reported data ranging from 57.9 percent to 129.7 percent. There are a number of factors that impact housing, but the use of construction and demolition data and the attribution of the net deviation to conversions is an assumption that was included in Round 2. The Round 2 methodology determined that residential conversion, "... is a significant and recognized source of housing supply to low- and moderate-income families" (26 N.J.R. 2349).

Due to economic circumstances affecting construction between 2000 and 2010 (Econsult) and between 2000 and 2014 (FSHC), many building permits did not result in new construction. Unlike prior periods, where the increase in housing units exceeded building permits less demolitions, the use of the post 2000 building permit data would suggest negative conversions since the increase in housing units was less than increase in building permits less demolitions. When building permits do not result in the construction of new housing, no change in housing inventory occurs, but is nevertheless attributed to creating a housing unit. In view of the post 2000 economic conditions that

are the basis for the projection of 2015-2015 changes, the use of certificates of occupancy, which does yield a positive residual, would be the more accurate approach.

Filtering

Secondary sources of housing supply and demand include housing market adjustments that change the composition and value of housing units. The concept of filtering encompasses the changes in the economic value of housing over time that results in altered affordability. Filtering is typically perceived as the private housing market process where existing housing units slowly deteriorate, decline in value and filter down to lower income households.

Filtering in Prior Rounds

The Round 1 and Round 2 methodologies included filtering as a secondary source of housing supply and the process of "filtering" was described in Round 2 as:

> "Filtering is a downward adjustment of housing which recognizes that the housing requirements of lower income groups can be served by supply additions to the higher-income sectors of the housing market. During the course of normal market operations, middle- and upper-income households vacate existing housing for new, more desirable units, leaving their units vacant for households of lesser income. Filtering is predicated on the existence of housing surpluses, which cause housing prices to drop because of the excess supply over demand." (In re Adoption of N.J.A.C. 5:93, Appendix A)

The likelihood of filtering was found in Round 2 to be highly correlated with the presence of older multi-family (five units or more) housing units:

> "...taking into account the dominance of single-family homes in New Jersey, filtering is found to be more active in those locations that have higher percentages of older multifamily units (five or more units in a structure) and much less active in locations where there are small percentages of multifamily units, or even newer multifamily units. Even though filtering takes place to some degree in all locations, it is much more an urban and older suburban (i.e., locations of older multifamily housing), than a new suburban or exurban phenomenon". (In re Adoption of N.J.A.C. 5:93, Appendix A)

Appellate Division Opinion

The calculation of filtering as a secondary source was included by COAH in 2004 in its proposed Round 3 methodology, however, the methodology used to calculate filtering was rejected by the Appellate Division in 2007. This decision [In re Adoption of N.J.A.C. 5:94 and 5:95, 390 N.J. Super. 1] stated that:

> "We conclude that the COAH premise, that housing is filtering down to low and moderate income households, lacks support in the record".

The rejection of the filtering proposed by COAH in 2004 was directed to the methodology that was proposed for the calculation of the filtering of housing units to low- and moderate- income households and left open the concept of filtering, provided that a rational basis for such calculations could be demonstrated by COAH:

> We do not invalidate the use of filtering as a secondary source. Its use, however, must be based upon the most recent data available to the agency". [In re Adoption of N.J.A.C. 5:94 and 5:95, 390 N.J. Super. 1]

COAH utilized a new filtering methodology in its 2008 Round 3 rules, and although the Appellate Division rejected the "Growth Share" approach contained in this second (2008) iteration of the Round 3 rules in 2010, it did not specifically address the filtering methodology contained therein. In the last (unadopted) iteration of the Round 3 rules published on June 2, 2014, COAH again included filtering within the secondary sources of its methodology. A description of the filtering process was included by COAH in the 2014 rule proposal which included the following:

> "Filtering is the process by which units decline in value and desirability and become available to lower-income households. This process begins when higher value housing is built by private developers. When higher-income consumers move into these new units, the demand for their prior units declines, causing values or rents to drop; the units then become available to consumers at a lower income level. In this way, the construction of new market-rate housing may reduce affordable housing needs by freeing up additional existing units for purchase or rent for moderate-income households. Filtering is most likely to take place in higher income housing markets containing sound housing undergoing significant turnover and in close proximity to substantial development." [In re Adoption of N.J.A.C. 5:99, Appendix C]

Although filtering was included as a secondary source of affordable housing in the Prior Rounds, the Appellate Division's 2007 decision requires that up-to-date data must be presented if filtering is to be considered as a secondary source of affordable housing supply.

FSHC Filtering Estimates - In its analysis of low and moderate income housing needs, FSHC's July 2015 report included filtering as a secondary source of housing supply for low and moderate income households. Filtering was defined by FSHC as "the housing market process by which some units decline in value and become affordable to low and moderate income households". It was noted by FSHC that filtering was included as a secondary source of low and moderate income housing need in the First and Second Round methodologies, but that the Appellate Division's 2007 decision invalidated COAH's method for calculating filtering in the first iteration of the Third Round rules.

The procedure used by FSHC for calculating filtering in its July 2015 report followed COAH's new methodology, developed by COAH's consultant (Econsult) which analyzed property-level data on 457,910 residential transactions. Using this new data, COAH projected a secondary source of 23,626 LMI housing units during the period from 1999 to 2018 which was projected to represent a net downward filtering of 66,653 units during the period from 1999 to 2025, or a statewide supply (reduction in LMI housing need) amounting to 2,563 units annually.

Unlike FSHC's July 2015 report, where filtering was addressed in one paragraph on Page 34-35, filtering encompasses eighteen pages (61-79) of text and data in FSHC's May 17, 2016 "New Jersey Fair Share Housing Obligations for 1999-2025 (Third Round) Under Mount Laurel IV" report. The discussion in this May 17, 2016 report addresses the potential for housing to filter down, as well as filter up through "gentrification". The Appellate Division's 2007 rejection of COAH's initial Third Round methodology for calculation of filtering has, according to FSHC, resulted in no court approved methodology for calculating and projecting filtering as a secondary source of LMI housing. FSHC further asserts, "Whether filtering is a credible source of affordable housing supply is problematic". (FSHC, May 17, 2016, page 61)

It was acknowledged by FSHC that their July 2015 model relied upon COAH's 2008 calculation of filtering, based upon Econsult's prior work, and that this data had been utilized "because it was the best data available". After reviewing Econsult's updated filtering calculations

contained in Econsult's December 2015 report, FSHC determined that this filtering model was no longer reasonable and decided to develop their own filtering analysis. FSHC's filtering analysis, which was introduced in the March 24, 2016 report and continued unchanged in their May 17, 2016 revised report, used some of the same data and code used by Econsult, but with significant modifications and the inclusion of a separate rental unit analysis. The filtering of "owner" occupied housing units was prepared using Econsult's December 2015 model with adjustments for occupancy costs in paired sales transactions, estimates of the units actually occupied by LMI households and estimates of deteriorated units.

In order to determine if filtering units were actually occupied by LMI households, FSHC describes the following process;

> "Finally, we develop ratios of affordable LMI HH to total affordable HH by county by year. We interpolate the data for 2001-2004 using a linear regression based on the 2000 and 2005-2014 data. For units that filtered up, at the time of the first sale, when the house was affordable, we apply the LMI affordability ratio, to account for the likelihood that the unit that filtered up was actually occupied by an LMI HH at the time of first sale; if it was not actually occupied by a LMI HH, the unit did not actually filter up from a LMI HH to a non-LMI HH. For units that filtered down, we apply the LMI ratio at the time of the second sale, when the unit became affordable, to account for the likelihood that a unit becoming affordable to a LMI HH would actually be occupied by a LMI HH; if a unit is hypothetically affordable to a LMI HH, but not actually occupied by a LMI HH, it does not actually reduce LMI housing needs."(FSHC, May 17, 2016, page 67)

The determination of the deterioration among filtering units relied upon 2000 Census and 2005-2014 ACS 1-year data and used the three present need surrogates (incomplete kitchen, incomplete plumbing, overcrowded and built before 1965[2]). For estimating the number of non-deteriorated units that filter up, the FSHC methodology states that, " we apply the probability, at the county level, of non-deteriorated unaffordable units to total unaffordable units at the time of the second sale to estimate the likelihood that the unit has not deteriorated". For units that filtered down, a similar process using county probabilities of deterioration is applied to derive estimates of units that had not deteriorated.

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[2] The pre-1965 construction cut-off would represent units 50 years old in 2015, but only 35 years, not 50 years old, at the beginning of the 2000-2015 cycle.

Using all of the foregoing estimates, likelihoods and probabilities, FSHC estimates the number of filtering units in the initial paired transactions. These paired transactions, however, are only a portion of total sales data and, therefore, must be extrapolated to represent a broader universe of all housing units. This extrapolation uses proportions, by municipality, of filtered units to overall paired transactions and then applies that proportion to the ACS data on the number of housing units in which the householder has moved since 2000. These estimates indicate that there are approximately four times the number initially generated for the 2000-14 period. The total owner-occupied housing units that filtered between 2000 and 2014 are then adjusted to the 1999 to 2015 time period. The results of these filtering calculations in the FSHC prediction model indicate a decrease of 22,895 housing units due to filtering between 1999 and 2015. Filtering estimates for the 2015-2025 time period anticipate an "upward housing cycle", and yield an estimated decrease of 50,958 housing units due to filtering during this subsequent (2015-2025) period. This prediction was found by FSHC to be so "astronomical" that it was not used and, instead, the 1999-2015 estimates (16 years) was pro-rated for the 10 year projection. This adjusted (pro-rated) projection yields a loss of 14,309 affordable housing units due to owner-occupied filtering between 2015 and 2025.

Having completed its estimates of owner-occupied LMI filtering, FSHC then proceeds to prepare estimates of filtering of rental housing units. FSHC asserts that there are no actual repeat transactions data for the rental market in New Jersey. Accordingly, FSHC prepares estimates of the number of non-deteriorated rental units that changed occupants since 1999 and how many have filtered from non-LMI households to LMI households. This procedure uses 2000 Census and 2005-2014 ACS 1-year data. Sample data from PUMS files were used to determine reported rents which are compared to UHAC affordability measures (30 percent of income). For each county, the share of renters who have moved in the past year with affordable rents is compared with the share of renters from the prior period ACS data in that county with affordable rents. If that share has increased, there has been net downward filtering in that county for that year, and that percentage change is multiplied by the number of households who moved in that county for that year

The rental filtering analysis needs to be adjusted to account for likelihood that rental units that have multiple tenants over the 14-year (2000-2014) period. For each county, the ACS 2014 One-Year PUMS is used by FSHC to provide the sum of units where there has been at least one

move since 2000. This is compared to the total number of moves recorded by PUMS to avoid double counting. Once these estimates have been generated at the county level they are allocated to municipalities based upon 2010-2014 ACS municipal data where a move has occurred since 2000. Data concerning deficiencies is also applied using the same criteria applied for the "Owner" filtering. After these adjustments for deficient units, a rental filtering estimate of non-deteriorated units is generated for every municipality in New Jersey where there has been a move since 2000. Total (owner and rental) net filtering in each county is allocated to each municipality by each municipality's share of the county total of non-deteriorated rental units in which there has been a move since 2000. The municipal totals are then multiplied by 16/14.25 to adjust the April 2000 to July 2014 data to derive an estimate for the July 1999 to July 2015 period. For the 2015-2025 period, the annualized average from the 1999-2015 period is multiplied by 10 to yield a future estimate for 2015-2025.

In their May 17, 2016 report, FSHC estimates a loss of 30,047 LMI housing units due to filtering between 2015 and 2025, for a total decrease in LMI supply between 1999 and 2025 of 78,122 LMI housing units.

FSHC Estimates of the Supply of Filtered LMI Housing Units

	1999-2025	2015-2025	1999-2025
July 2015	----	-----	+66,653
May 17, 2016	-48,075	-30,047	-78,122

The most recent filtering estimates of FSHC disclose an upward filtering that reduces the supply of LMI housing which is contrary, not only to the downward filtering in the Prior Rounds, but a substantial deviation from the downward filtering in FSHC's July 2015 filtering analysis. The net deviation between FSHC's July 2015 and May 17, 2016 filtering estimates amounts to an increased need for 144,775 affordable housing units. The change (144,775 units) in this one secondary source (filtering) is greater that the total Gross Prospective Need (138,471 units) estimated by FSHC. Moreover, the filtering probabilities used in FSHC's prediction model were so "astronomical" (FSHC, May 17, 2016, page 70) that the filtering losses attributable to owner-occupied housing were reduced by FSHC from 50,958 units to a prorated estimate of 14,309 units that was used in the May 17, 2016 estimate.

Econsult Filtering Estimates - Estimates of the impact of filtering on the supply of LMI housing units during the 2015-2025 Prospective Need period are presented in Econsult's December 30, 2015, March 24, 2016 and May 16, 2016 reports. The concept of filtering is described as the process whereby housing stock becomes available to LMI households as housing units age, deteriorate and become outdated. Upward filtering occurs when a location becomes more valuable, and is sometimes referred to as gentrification, but is much less common than downward filtering. Econsult's May 16, 2016 report reviews the history of filtering as a secondary source of LMI housing in Round 1 and Round 2, where housing units were tracked over period of time using data from the American Housing Survey to measure the difference between housing units filtering down and filtering up from affordable housing categories. In the Prior Rounds, these filtering changes were measured and annualized in order to project future filtering.

Econsult reports that a similar methodology was used to determine filtering in the 2004 Round 3 methodology, and was rejected by the Appellate Division in 2007. This decision, as previously discussed, did not invalidate the use of filtering as a secondary source but rejected the methodology because it "lacks support in the record". Following this 2007 decision, COAH engaged Econsult to create a new filtering methodology based upon housing transaction data to be used in the second iteration of COAH's Round 3 rules. Although the second iteration of COAH's Round 3 rules was rejected by the Appellate Division in 2010 due its "Growth Share" approach, this decision did not address the revised filtering component.

The filtering methodology used by Econsult in its March 24, 2016 "New Jersey Affordable Housing Need and Obligations" report involves three steps: 1) collect data for 2000-2014 housing transactions, combined with census income data and housing stock to measure historic filtering; 2) create a model to determine geographic probability of filtering; and, 3) apply the model to municipalities to estimate future filtering. The first step involves the collection of data on "paired" housing sales including changes in sales price by geographic region and a comparison to changes in household income by census tract. For a paired transaction to be considered as filtering, the change in price must differ significantly from price changes in the region. The filtering model then uses a regression of variables including the size and density of the community, change in housing stock, median household income and other factors to estimate the probability of either filtering up or filtering down. These filtering probabilities are then forecasted to estimate the number of owner

occupied housing units that could potentially filter using sales data from 2000 to 2014 to develop average annual filtering which is then applied to the ten year 2015-2015 Prospective Need period.

The results of Econsult's data collection, modeling and forecasting in their March 24, 2016 2016 report yields an estimate of 151,495 units that filter down which is offset by 110,679 units that filter upward, for a net filtering of affordable housing supply amounting 40,816 units between 2015 and 2025. Econsult concludes that the filtering as a secondary source is estimated to create a supply of 40,816 LMI housing units that would reduce affordable housing need between 2015 and 2025.

Econsult's estimates of filtering as a secondary source of affordable housing are also provided in their most recent May 16, 2016 "Need and Obligations" report. The initial text and description are similar to the December 30, 2015 report with the exception of the addition of the five factors that were advanced as being necessary for filtering to occur in the 2007 Appellate Division decision:

1) an overall housing surplus;
2) a surplus of new housing construction over new household formation;
3) no major non-price barriers, such as discrimination, that limit mobility among low-income households;
4) moderate operating costs for newly built units; and
5) a limited number of poor households.

Although Econsult does not necessarily agree with these factors as they relate to the procedure for the calculation of filtering, information in response to each of the five factors is provided to illustrate that the conditions necessary for filtering do exist in New Jersey.

The preparation of estimates of filtering for the 2015-2025 period that are presented in Econsult's May 24, 2016 "Need and Obligations" utilize the same three step process employed in the prior report: 1) collect data for 2000-2014 housing transactions, combined with census income data and housing stock to measure historic filtering; 2) create a model to determine geographic probability of filtering; and, 3) apply the model to municipalities to estimate future filtering. The filtering in Econsult's May 16, 2016 report is estimated to create a 2015-2025 supply of 37,604 LMI housing units, compared to a supply of 30,187 units in the prior (December 2015) analysis and 40,816, LMI housing units in the March 24, 2016 analysis.

Econsult's Estimates of the 2015-2025 Supply of Filtered LMI Housing Units

Econsult Report	Units Filtering Down	Units Filtering Up	Net Filtering
December 30, 2015	+ 56,577	- 26,390	+30,187
March 24, 2016	+151,495	-110,679	+40,816
May 16, 2016	+135,515	- 97,911	+37,604

As indicated in the preceding comparisons, Econsult has implemented ongoing revisions and refinements to their 2015-2025 filtering estimates, with the most recent (May 16, 2016) estimate indicating a reduced supply compared to their March estimate, but higher than their original (December) estimate. Notwithstanding these revisions, all of Econsult's filtering estimates indicate a supply of filtered LMI units that would reduce affordable housing needs.

Filtering Comparisons

Throughout the preceding review of the methodologies advanced by FSHC and Econsult, differences have been revealed in their estimates for the various components of affordable housing need. In some instances the variances were nominal and in others more significant, however, on the issue of secondary sources, and particularly on the matter of filtering, the differences could not be more pronounced. The filtering analysis contained in FSHC's May 17, 2016 report indicates that filtering would reduce the supply of LMI housing by 30,047 filtered units between 2015 and 2025, while Econsult's May 16, 2016 report estimates that filtering increases LMI housing supply by 37,604 housing units. The total differential attributable just to filtering in these two methodologies amounts to 67,651 housing units:

Supply of Filtered LMI Housing
(Impact on 2015-2025 Affordable Housing Need)

	LMI Filtered Supply (Units)
FSHC (05/17/16)	-30,047
Econsult (05/16/16	+37,604
Net Difference	67,651

The adjustments to affordable housing needs for secondary sources, and particularly the adjustments for filtering, include an abundance of adjustments, probabilities, likelihoods and extrapolations that raise the threshold issue of reasonableness that was addressed by Judge Serpentelli in AMG Realty Co. vs Warren Township:

> "The pivotal question is not whether the numbers are too high or low, but whether the methodology that produces the numbers is reasonable. Any reasonable methodology must have as its keystone three ingredients: reliable data, as few assumptions as possible, and an internal system of checks and balances . Reliable data refers to the best source available for the information needed and the rejection of data which is suspect. The need to make as few assumptions as possible refers to the desirability of avoiding subjectivity and avoiding any data which requires excessive mathematical extrapolation. An internal system of checks and balances refers to the effort to include all important concepts while not allowing any concept to have a disproportionate impact. [*AMG Realty Co vs. Warren Twp* at 423]

The differences in population projections, the proportion of total households that are LMI households and the diametrically opposed estimates of the impact of secondary sources are three major factors that separate the FSHC and Econsult methodologies.

9.0 SUMMARY OF FINDINGS AND RECOMMENDATIONS

The preceding sections of this report have examined the various data, procedures and calculations contained in the methodologies developed by FSHC and Econsult for estimating and allocating affordable housing needs and obligations to municipalities and regions. Unlike the initial methodology assessment prepared in October of 2015, when only a single methodology had been submitted, this review has the benefit of two alternative procedures for estimating municipal affordable housing needs. The reports prepared and submitted by FSHC and Econsult and supplemented by reports prepared by Daniel T. McCue, Art Bernard and Associates, Otteau Valuation and Nassau Capital Advisers, disclose significant variations in the calculation of affordable housing needs. Notwithstanding the precision implied by the complexity of the estimates and projections that have been submitted, it is apparent that the determination of affordable housing needs is not a precise mathematical process and does not yield identical results when undertaken by different practitioners.

To simplify and streamline this summary of the review process, each and every step in the construction of these estimates will not be reiterated, but will focus on the major distinctions between the two alternative methodologies with observations as to their impact. Recommendations to the court for the use of elements from each methodology are presented along with an assessment of the resulting affordable housing implications for Ocean County's 33 municipalities.

Prior Round Obligation

The Council On Affordable Housing calculated Prospective Need for the First Round (1987-1993) and calculated a cumulative Prospective Need (1987-1999) for the Second Round in 1993. Depending upon the source referenced for data regarding Prior Round Obligations, this statewide need ranges from 85,875 to 85,964 affordable housing units and from 8,880 units to 8,887 units in Ocean County. Neither FSHC or Econsult acknowledged a subsequent Ocean County correction made by COAH that reduced the Prior Round obligation of Toms River Township from 2,233 to 1,735 units, for a net decrease of 498 units.

Recommendation - The prior round obligations in Ocean County deviate by 7 housing units prior to the subsequent COAH correction (498 units) for Tom River Township. It is recommended that Ocean County's unadjusted, Prior Round assignment of 8,880 affordable housing units should be utilized and that any deviations, including subsequent corrections made by COAH, should be addressed in the course of individual municipal compliance proceedings.

Present Need

Present Need, also referred to as "Indigenous Need" or "Rehabilitation Share", is the portion of the total housing inventory within each municipality that is represented by deficient housing occupied by low and moderate income households. Due to changes in data availability, the estimates of Present Need are now made using three revised housing deficiency surrogates: 1) lacking complete plumbing facilities; 2) lacking complete kitchen facilities, and; c) crowded (more than 1.01 persons per room) in housing units at least 50 years old.

Econsult utilized the new deficiency surrogates and developed estimates of the number of "unique" deficient units (counting single, not multiple deficiencies) along with estimates of the proportion of the unique deficient units occupied by LMI households. Econsult's analysis resulted in an estimate of the statewide present need (unique deficient LMI units) of 61,500 LMI units in 2011 and increasing to 65,034 LMI housing units in 2015. FSHC has also prepared a calculation of the number of unique deficient LMI housing units and estimated 64,605 LMI units in 2012 and decreasing to 60,015 LMI units in 2015. The decline in the LMI present need estimated by FSHC is due to a change in the definition of "old" in the "old and overcrowded" surrogate from 50 years for 2015 to 35 years for 2000 by retaining the same pre-1965 cut-off for both estimates. This definitional change in the structure of the 2000 estimate impacts the 2012 to 2015 projection by the use of the 35 year old cut off for "old and overcrowded" in the 2000 estimate (as opposed to at least 50 years old in the 2015 estimate).

Recommendation - The truncated cut-off date in the FSHC's calculation of Gap Period Present Need is contrary to the procedures for determining housing deficiencies and undermines the reliability of the FSHC estimates. Thus, Econsult's higher 2015 present need estimate of 65,034 LMI units is recommended for this component of affordable housing need.

Prospective Need

The development of estimates of a future anticipated need for LMI housing is based upon expectations for population growth, the accompanying increases in households and a determination of the proportion of the household growth represented by LMI households. Increases in population are a primary determinant in the estimation of affordable housing needs during the 2015-2025 Prospective Need period. Unlike the 2000-2015 interval, where changes in municipal, regional and statewide population can be determined by actual, reported population increases in reports published by the Bureau of the Census, the population changes during the 2015-2015 Prospective Need period are dependent upon projections, forecasts and other estimates.

For the purpose of Prospective Need population projections, NJDLWD's Economic-Demographic model is used by FSHC while Econsult adopts the Round 2 approach that averages NJDLWD's Historic Migration and Economic-Demographic Models. The Economic-Demographic model projects a 2015-2015 population increase of 419,027 persons while the averaged Historic Migration and Economic-Demographic model projects a 2015-2015 population increase of 304,520 persons. The total population growth, upon which the household growth is based, ranges from 30,452 persons/year in Econsult's projections to 41,903 persons/year in the FSHC projections. The total population growth between the 2000 and 2010 Census amounted an average annual increment of 37,764 persons while the population increment between the 2010 Census and the Census's mid-year 2015 estimate amounts to 33,527 persons annually.

The annual growth recorded between 2000 and 2010 (37,764 persons / year) is more closely aligned with the FSHC estimate (41,903 persons / year) while the post 2010 growth (33,527 persons/year) is closer to, but still above, the Econsult estimate (30,452 persons /year). The population projections prepared by Econsult reflect a slight diminishment of the population growth trends observed since 2000 while the FSHC projections anticipate an increased rate of population growth compared to the post 2000 period. These differentials can be traced to the use of different NJDLWD projection models, where the Economic-Demographic Model anticipates more robust growth expectations than are anticipated by the "averaging" of the Economic-Demographic and Historic Migration Models.

After deducting estimated group quarters populations, the number of household residents are derived and are applied to projected headship rates to estimate the number of occupied households.

A constant headship rate is used by FSHC while Econsult follows the Second Round methodology that projects headship rates at one-half the rate of change observed in a prior (2005-2014) period. These population and headship rates projections yield 2015-2025 household increments of 204,675 households (FSHC) and 146,240 households (Econsult).

The NJDLWD projections indicate that all of the State's household growth over the next ten years (2015 and 2025) will be in households headed by persons 65 years or older, while the number of working age households (under 65) will decrease. This significant demographic change, where all household growth will be in households headed by persons 65 and over (predominantly one and two person households) will result in a reduced household size and, concomitantly, a decrease in the persons/household increment. This declining household size would suggest a greater, rather than lesser, household growth even with a household population increment similar to the 2000-2010 change. Accordingly, the more robust household growth estimated in the FSHC projections and headship rates are recommended for the prospective need period.

The proportion of the total households that are LMI households are estimated differently by the alternative methodologies. FSHC estimates the proportion of LMI households utilizing Census, ACS data and COAH income limits to estimate the number of LMI households and this procedure results in FSHC's estimate that LMI households would represent two-thirds (67.65 percent) of the total household growth between 2015 and 2015. Econsult's estimates of the proportion of total households that are LMI households are calculated directly from Census and ACS income data rather than using HUD/COAH income thresholds and results in an estimate that between 2015 and 2025, 40.71 percent of the total increase in households would be LMI households, which is significantly below the incremental LMI share (67.65 percent) projected by FSHC. Whereas FSHC contends that their procedure is similar to the approach utilized in the prior rounds, the proportion of total households that are LMI households, is not determined using the proportion of households reflected in Census and/or ACS data with household incomes below 80 percent of the median by household size, but in comparison to HUD "county income limits by family size". There are significant differences in the median incomes of households and families. The ratios used in the income qualification tables are structured around four person families that are reduced by household size and indicate that one-person households have a median income that is 70 percent of a four person family when the actual proportion is 31.2 percent. Similarly, a two-person household is assumed to have

a median income that is 80 percent of a four person family when the actual proportion is 69.0 percent. These deviations in one- and two-person households, which account for 56.4 percent of all households contribute to FSHC's estimation that nearly 70 percent of all new households will be LMI households. This allocation is clearly not consistent with COAH's prior findings that, "nonetheless, almost by definition, about 40 percent (40.622 %) of household growth will be comprised of low- and moderate-income households". In this regard, the LMI proportion of households growth estimated by Econsult (40.71%) is recommended to be utilized.

The population projections of NJDLWD provide the foundation for the estimates of total and LMI household growth and are the numerical basis of the allocation of affordable housing needs that are assigned to municipalities for the formulation of housing elements and fair share plans. These older (65 +) households, most of which are already housed, are not seeking employment and are not the households that are the target of Mount Laurel zoning initiatives. While some of these households may have retirement incomes diminished to the extent that they may represent a legitimate housing need, only a small percentage of the households headed by an individual over 65 are in the market for new housing.

The prospective need represented by older (65 +) households should be adjusted to account for the financial capabilities of these households. In COAH's last iteration of its Third Round Rules, Dr. Burchell performed an "asset test" and found that 13.0 percent of statewide LMI households owned their homes with no mortgages and spent less than 38 percent of income on housing costs. Econsult's current methodology also provides estimates of households with "significant housing assets" as an adjustment to affordable housing needs. Given that the entire growth of LMI households in the Prospective Need projections are older (65+) LMI households, this asset test would represent a minimum adjustment to the extent that it only measures housing assets and does not include accumulated savings and other non-housing assets. Notwithstanding the need for an adjustment to account for the other assets of the elderly households that represent the total growth in 2015-2025 households, such an adjustment was not included in the Round 1 or Round 2 methodologies.

The unique financial position of elderly households, however, was a consideration that was addressed by Judge Serpentelli's comments in AMG:

"... it must be recognized that many people of retirement age have developed substantial assets which allows them to acquire homes. However, based upon their reported income, they could nonetheless fall into the category of financial need at least within the Mount Laurel II definition. [*AMG Realty Co vs. Warren Twp* at 423]

The NJDLWD population projections provide the foundation for the estimates of total and LMI household growth and are the numerical basis for the affordable housing needs assigned to municipalities for their housing elements and fair share plans, and these projections indicate that between 2015 and 2025, all of the State's household growth will be in households headed by persons 65 years or older while the number of working-age households will decrease.

Recommendation - Although the "averaged" population estimates provide a more conservative measure of future household growth, the projected population increments with the "averaged" model are below the increments observed over the past fifteen years. The population, headship rate and household projections developed by FSHC based on the NJDLWD Economic-Demographic model are recommended for the estimation of municipal affordable housing needs in Ocean County. The determination of the LMI share by using actual household incomes undertaken by Econsult is a more accurate and reasonable methodology and is thus recommended. An adjustment to account for older (65+) households with significant assets, particularly in view of the entirety of future LMI household growth occurring in this category, would be appropriate but is not specifically authorized by the Prior Rounds and is therefore not recommended. Using the higher population projections from the Economic-Demographic model, a constant headship rate and actual household incomes to determine LMI share are recommended for the calculation of the 2015-2025 Prospective Need for Ocean County.

Municipal Allocations

Affordable housing needs are estimated and projected for housing regions and are allocated as individual obligations to each region's municipalities. These allocations utilize a process that distributes the identified regional need among the municipalities within that region after identifying and excluding "qualified urban aid" municipalities, preparing estimates of each municipality's

"responsibility" based on their share of the region's non-residential/labor force development and the municipality's "capacity" in terms of its physical and fiscal ability to absorb a share of the region's need based upon its proportionate share of vacant development land and household incomes. The procedures used by FSHC and Econsult to allocate municipal affordable housing obligations follow a similar process, but vary in their data base and the specific calculations to establish the municipal shares of regional need during the Gap Period and Prospective Need period.

Variations exist in the number and identity of qualified urban aid municipalities noted by FSHC and identified by Econsult and the non-residential growth responsibility is measured using commercial and industrial valuations by FSHC and by updated municipal employment data used by FSHC. The physical capacity to accommodate new development is based upon different determinations of developable land with FSHC using GPS aerial survey data while Econsult supplements the process with municipal tax records (Block and Lot) information. Finally, the weighted average used for municipal allocations is the average of three factors (non-residential ratables, vacant land and municipal household income) used by FSHC while Econsult averages four factors (employment base, employment growth, vacant land and municipal household income). The use of two employment factors by Econsult offsets the non-reallocation of working-age households in their model. A reallocation of working age LMI households is not undertaken by FSHC in the Prospective Need period due to the projected decrease in working-age LMI households.

Recommendation - The greater potential accuracy of the employment based allocations as well as the property-based vacant land determinations used by Econsult would represent improvements over use of the non-residential valuation as a proxy for employment as would the use of municipal property classifications compared to GIS surveys. These improvements, however, represent a deviation from the sources utilized in Round 2 and, thus are not recommended.

Secondary Sources

Secondary sources represent market forces that affect the supply of LMI housing units and include demolitions, residential conversions and filtering. These secondary sources reflect changes in the overall housing inventory through loss, reconfiguration and pricing. Data regarding the effect

of secondary sources upon lower income households is not directly reported, but is estimated in terms of probabilities.

Demolitions

Demolitions are a measurement of structures, not households, and reflect the fact that, from time to time, housing structures are destroyed and/or demolished. Such demolitions may occur for a variety of reasons including damage from natural causes such as fire, floods and storm damage, from non-disaster circumstances such as deterioration and dilapidation, response to code requirements, urban renewal, redevelopment activities, abandonment or simply a desire to replace an existing structure with a new structure. Demolitions include vacant and seasonal housing units that are outside of the number of occupied "households" that is the foundation for the formulation of affordable housing needs. A determination of prior occupancy status, their soundness and their suitability for LMI households are needed for accurate inventory adjustments.

To estimate the LMI share of these demolitions, FSHC followed the Round 2 methodology where the proportion of LMI households in each county is increased by 120 percent and is then "capped" at 95 percent of conversions. Econsult's demolition estimates utilize the base data from DCA as well as additional data to identify and account for deficient housing units occupied by a LMI household, unoccupied (vacant) housing units and non-deficient housing occupied by LMI households. In Econsult's estimates, for demolitions to be counted as a reduction of affordable housing units, the units must: 1) have been previously occupied, and: 2) occupied by a LMI household. The prior occupancy status of the demolished units is derived by Econsult from national, rather than New Jersey or regional data while the proportion of demolished units affecting LMI households is derived from national Components of Inventory Change (CINCH) data. The proportion of the demolished housing units that were "non-deficient" prior to demolition is not calculated by FSHC.

Recommendation - The estimates of the residential demolitions reflect structure-based losses that are dependent upon accurate reporting of residential buildings for which a demolition permit is issued. Municipal variations in the reporting of permits issued for the total, or partial,

demolition of a structure may or may not accurately reflect the number of residential "units" involved. The estimating processes undertaken by FSHC and Econsult are intended to provide an estimate of the number of demolished housing units that; 1) were not vacant housing units; 2) were not seasonal housing units; 3) had been occupied prior to their demolition; 4) were occupied by and affordable to a LMI household prior to demolition; and, 5) were not deficient housing units. The degree to which the procedures utilized by FSHC have achieved the objective of determining the number of demolitions of non-vacant, non-seasonal, non-deficient, recently occupied, occupied and affordable to LMI households is not readily apparent in their 2015-2025 estimate of 19,262 LMI demolitions. Econsult identifies total demolitions, the percent LMI occupied and the percent LMI occupied and deficient, resulting in a 2015-2025 estimate (18,653 LMI units) which is recommended for the purpose of determining this secondary source.

Residential Conversions

The creation of a new residential dwelling unit from an existing structure (residential or non-residential) represents another market driven source of housing supply. In the Prior Rounds, net residential conversions were a source of housing supply that were determined to reduce LMI housing needs. Residential conversions are not a housing activity that is directly reported, but were estimated in Round 1 and Round 2 as a net change in housing stock over the prior period, adjusted for new construction and demolition activity, with conversions assumed to represent the residual. The specific calculation of the number of residential conversions is influenced by the data used to measure the housing increment (total housing units or occupied households) and to measure construction activity (building permits or certificates of occupancy).

An estimate of the number of residential conversions was undertaken by FSHC that used a procedure where the observed increase in housing is compared to the construction authorized by building permits, less demolitions, with the difference attributed to conversions. Following the COAH's Round 2 procedures, the proportion of residential conversions affecting LMI households was calculated by FSHC by taking 120 percent of each county's LMI household share, with this proportion applied to the total number of residential conversions. Residential conversions were estimated to provide a supply of LMI units in FSHC's July 2015 calculations but a reduction of LMI units in FSHC's May 17, 2016 estimates.

Econsult's procedure differs from that employed by FSHC primarily through the use of certificates of occupancy and opposed to building permits. The proportion of the residential conversions affordable to LMI households is based upon the Round 2 methodology applied to 120 percent of the proportion of households qualifying as LMI in each county to the total residential conversions allocated to each municipality. Econsult's estimates that residential conversions will provide a projected supply of 11,152 LMI housing units from conversions between 2015 and 2025.

Recommendation -The concept that the difference between the actual increase in housing units (reported by the Census) less the number of demolition permits plus building permits (or certificates of occupancy) can be attributed to "conversions" presumes a level of accuracy and assumptions that may or may not support this premise. Building permits are issued and reported by municipal construction officials with differing degrees of thoroughness and accuracy and building permits issued in one year (or housing cycle) may be constructed in another year or housing cycle, or not at all. Certificates of Occupancy are also subject to varying degrees of accuracy in reporting and may be issued for the occupancy of a structure containing multiple housing units. Due to economic circumstances affecting post 2000 construction, many building permits did not result in new construction. When building permits do not result in the construction of new housing, no change in housing inventory occurs, but is nevertheless attributed to creating a housing unit. In view of the post 2000 economic conditions that are the basis for the projection of 2015-2025 changes, the use of certificates of occupancy, which does yield a positive residual, would be more accurate and is the recommended approach.

Filtering

The concept of filtering encompasses the changes in the economic value of housing over time that alters affordability. Filtering is typically perceived as the private housing market process where existing housing units slowly deteriorate, decline in value and filter down to lower income households. The Round 1 and Round 2 methodologies included filtering as a secondary source of LMI housing supply. Filtering was also included as a secondary source of LMI housing supply by COAH in 2004 in its proposed Round 3 methodology, but the methodology used to calculate

filtering was rejected by the Appellate Division in 2007 where it found that housing filtering down to low and moderate income households "lacks support in the record". The rejection of the filtering proposed by COAH in 2004 was directed to the methodology that was used for the calculation of filtering of housing units to low- and moderate-income households, and left open the possible use of filtering, provided that a rational basis for such calculations could be demonstrated. COAH utilized a new filtering methodology in its 2008 Round 3 rules and, in the last (unadopted) iteration of the Round 3 rules, COAH again included filtering within the secondary sources of its methodology.

FSHC prepared estimates of filtering it its July 2015 report that followed COAH's new methodology, developed by COAH's consultant (Econsult), which analyzed property level data on 457,910 residential transactions. Using this new data, COAH had estimated that filtering would provide a supply of 23,626 LMI housing units during the period from 1999 to 2018 which FSHC used to project to a net filtering supply of 66,653 units during the period from 1999 to 2025, reducing affordable housing need by a like amount. A new filtering methodology was introduced by FSHC in its March 24, 2016 report because it had determined that the filtering model that it had utilized in the July 2015 report was no longer reasonable. Using its new filtering estimates, adjusted by likelihoods and probabilities, FSHC estimated the number of filtering units from the selected paired transactions, which were then extrapolated for all housing units, as well as separate rental filtering estimates.

This updated filtering methodology estimated a total decrease in LMI supply of 78,122 LMI housing units between 1999 and 2025. The revised estimate of a decrease of 78,122 LMI units due to filtering is a very substantial change from the increase of 66,523 LMI units due to filtering in FSHC's July 2015 estimates. FSHC's most recent (May 17, 2016) report provides an estimate of 2015-2025 filtering that amounts to a decrease of 30,047 LMI units due to filtering. The reduction of LMI housing as a result of filtering is contrary to the supply estimated by FSHC's initial analysis, the supply of 20,185 LMI units in COAH's Round 2 estimates and the supply of 24,925 LMI units attributable to filtering in COAH's unadopted 2014-2024 estimates.

Econsult provides estimates of LMI housing affected by filtering during the Gap Period and Prospective Need period in its December 22, 2015, March 24, 2016 and May 16, 2016 reports. The

filtering procedure used by Econsult involves the collection of data on "paired" housing sales including changes in sales price by geographic region and a comparison to changes in household income by census tract. The filtering model then uses a regression of variables including the size and density of the community, change in housing stock, median household income and other factors in order to estimate the probability of either filtering up or filtering down. These filtering probabilities are then forecasted to estimate the number of owner occupied housing units that could potentially filter using sales data from 2000 to 2014 to develop average annual filtering which is then applied to the ten year 2015-2015 Prospective Need period. With the inclusion of the potential for rental filtering, Econsult's May 16, 2016 reports yields a combined net downward filtering estimate for 2015 to 2025 that amounts to a supply of 37,604 housing units that would reduce affordable housing need.

Recommendation - Differences have been observed in the estimates and projections by FSHC and Econsult for many of the components of affordable housing need, however, the differentials in filtering estimates could not be more pronounced. During the prospective need period, FSHC's estimates have reversed from a filtering supply of units to a decrease of LMI housing units. Econsult estimates that filtering produces a 2015-2025 supply of 37,604 LMI housing units. Whereas Econsult's calculations indicate that filtering will provide a supply of LMI units that is consistent with COAH's Round 2 and Round 3 methodologies, the procedures used to develop this estimate involve an abundance of adjustments, probabilities, likelihoods and extrapolations that question the reasonableness of the data and process.

The differences observed between FSHC and Econsult in their estimates of the LMI housing supplied by filtering are so disparate that the reliability of the procedure is questionable and the selection and interpretation of particular data sets is likely to determine the outcome. The differentials between estimates prepared a few months apart, or concurrently by different practitioners, are beyond the realm of reconciliation. There is no obvious consensus of even the direction of the impact of filtering and, absent a clear and convincing demonstration of their accuracy, it is recommended that filtering not be included in the determination of fair share obligations for the municipalities in Ocean County.

Overview and Ocean County Affordable Housing Need

The preceding review of the methodologies presented by FSHC and Econsult for determining and allocating municipal affordable housing needs have disclosed detailed and complex analytical procedures involving a sequence of data choices to estimate and project affordable housing needs. The areas of disagreement between the alternative methodologies are many, agreements are few, and the selection of the best sources of data and analytical procedures is recommended to yield realistic estimates for each component of affordable housing need representing municipal fair share. Within a framework of analytical and legal precedents, each methodology has certain strengths as well as shortcomings, and the use of a composite of the two methodologies is recommended for determining and allocating affordable housing needs. The recommendations that are presented to the court in order to establish the numerical targets for municipal compliance and include the following:

1. **Prior Round Obligation** - There is little difference in the statewide, regional and municipal Prior Round obligations reported by the two alternative methodologies. It is recommended that any deviations, including subsequent COAH corrections, should be addressed in the course of individual municipal compliance proceedings.

2. **Present Need** - The truncated cut-off date in the FSHC's calculation of 2015 Present Need is contrary to the procedures for determining housing deficiencies and undermines the reliability of FSHC's 2015 Present Need projection. Econsult's estimate of a Present Need for 2015 avoids this definitional change and is thus recommended.

3. **Prospective Need** - Although the "averaged" population estimates provide a more conservative measure of future household growth, the projected population increment with the "averaged" model is below the increment observed over the past fifteen years. Accordingly, the Prospective Need population projection based upon the Economic-Demographic model used by FSHC, along with the accompanying constant headship rate assumptions, are recommended. The determination of the LMI share based upon actual household incomes utilized by Econsult is a more accurate methodology and is thus recommended. An adjustment to account for the economic circumstances of older (65+) households, which comprises the entire LMI growth projection, is warranted, but is not recommended due to the absence of a foundation in the prior round methodologies.

4. **Secondary Sources** - Adjustments to LMI housing needs attributable to demolitions and conversions are recommended notwithstanding the indirect nature of these allocations to LMI households. Although filtering was estimated to provide a significant supply of LMI housing in Round 2, the current estimates prepared by FSHC and Econsult contain an abundance of probabilities, likelihoods, and extrapolations resulting in differentials between estimates

prepared a few months apart, or concurrently by different practitioners, that are beyond the realm of reconciliation. The inclusion of filtering to adjust affordable housing needs is not recommended.

Utilizing the recommendations for determining Prior Round obligations, Present Need and Prospective Need, the affordable housing needs and obligations for the municipalities in Ocean County have been prepared. The results of the recommended adjustments are presented for all Ocean County municipalities in Appendix 1, and the effect of the Ocean County's recommended adjustments applied to Region 4 and New Jersey are summarized as follows:

Recommended Affordable Housing Needs

	Prior Round	Present Need*	Prospective Need*	Combined*
Ocean County	8,880	2,192	5,784	16,856
Region 4	27,359	7,184	15,115	49,658
New Jersey	85,875	64,804	88,584	239,263

Ocean County Needs Comparisons - A comparison of the affordable housing needs for Ocean County's municipalities, as recommended, vis-a-vis the corresponding estimates contained in the most recent reports prepared by FSHC and Econsult are summarized below:

Comparison of Ocean County Affordable Housing Needs

	Prior Round	Present Need*	Prospective Need*	Combined
FSHC (05/17/16)	8,880	2,255	14,475	25,610
Econsult (05/16/16)	8,887	2,087	2,122	13,096
Recommendation	8,880	2,192	5,784	16,856

The affordable housing needs recommended for Ocean County during the 2015-2025 Prospective Need period amount to a need for 5,784 affordable housing units, which is less than one-half (40.0 percent) of the need for 14,475 units estimated by FSHC, but is 2.73 times the need for 2,122 housing units estimated by Econsult. All of these estimates are prior to the 1,000 unit cap, which may reduce the needs for certain municipalities.

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* Post 20 percent cap prior to 1,000 unit cap

APPENDIX 1

Report and Recommendations - July 29, 2016 Summary of Municipal Affordable Housing Needs

Municipality	County	Region	Present Need, 2015 (units)	Prior Round Obligation, 1987-1999 (units)	Cumulative Prospective Need, 1999-2025 (post 20% cap and pre 1,000-unit cap) (units)
Barnegat Light Borough	Ocean	4	12	84	26
Barnegat Township	Ocean	4	57	329	213
Bay Head Borough	Ocean	4	0	65	53
Beach Haven Borough	Ocean	4	1	70	77
Beachwood Borough	Ocean	4	2	123	57
Berkeley Township	Ocean	4	84	610	381
Brick Township	Ocean	4	287	930	536
Toms River Township	Ocean	4	269	2233	1275
Eagleswood Township	Ocean	4	0	36	29
Harvey Cedars Borough	Ocean	4	1	37	24
Island Heights Borough	Ocean	4	3	31	35
Jackson Township	Ocean	4	49	1247	749
Lacey Township	Ocean	4	70	580	251
Lakehurst Borough	Ocean	4	18	66	14
Lakewood Township	Ocean	4	576	0	0
Lavallette Borough	Ocean	4	0	82	74
Little Egg Harbor Township	Ocean	4	170	194	294
Long Beach Township	Ocean	4	15	41	185
Manchester Township	Ocean	4	140	370	343
Mantoloking Borough	Ocean	4	0	59	34
Ocean Gate Borough	Ocean	4	5	12	52
Ocean Township	Ocean	4	10	236	89
Pine Beach Borough	Ocean	4	3	41	31
Plumsted Township	Ocean	4	13	47	44
Point Pleasant Beach Borough	Ocean	4	9	167	152
Point Pleasant Borough	Ocean	4	30	343	122
Seaside Heights Borough	Ocean	4	137	0	12
Seaside Park Borough	Ocean	4	28	52	52
Ship Bottom Borough	Ocean	4	0	71	76
South Toms River Borough	Ocean	4	26	51	27
Stafford Township	Ocean	4	144	555	368
Surf City Borough	Ocean	4	3	49	63
Tuckerton Borough	Ocean	4	30	69	45
TOTAL			2,192	8,880	5,784